MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  معلومات المادة الدراسية | | | | | | | |
| **Module Title** | **Engineering Drawing** | | | | **Module Delivery** | | |
| **Module Type** | **Support** | | | | * **Theory** * **Lecture**   **☒ Lab**   * **Tutorial** * **Practical** * **Seminar** | | |
| **Module Code** | **MIE11206** | | | |
| **ECTS Credits** | **5** | | | |
| **SWL (hr/sem)** | **125** | | | |
| **Module Level** | | UGI | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | MIE | **College** | MUC | | | |
| **Module Leader** | Sarah Harith | | **e-mail** | sarah.harith@muc.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Assistant Lecturer | **Module Leader’s Qualification** | | | | M.Sc. |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | | Dr. Noor Kadhim Meftin | **e-mail** | noor.kadhim@muc.edu.iq | | | |
| **Scientific Committee Approval Date** | | 8/11/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  العلاقة مع المواد الدراسية الاخرى | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية | |
| **Module Aims** | The module aims for the Basics of Engineering Drawing courseware is to teach the student the basic commands necessary for professional 2D drawing, design, and drafting using AutoCAD. Upon completion of the course, the student will:   * Become familiar with the AutoCAD user interface. * Understand the fundamental concepts and features of AutoCAD. * Use the precision drafting tools in AutoCAD to develop accurate technical drawings. * Present drawings in a detailed and visually impressive manner. * Develop a level of comfort and confidence with AutoCAD through hands-on experi- ence. |
| **Module Learning Outcomes** | Upon completion of the course, students should be able to:   1. The student will describe key terms and concepts associated with drafting and the drafting profession.    * Identifying software drafting tools (e.g. AutoCAD, Micro station, SolidWorks, and Google Sketch Up). 2. The student will identify elements of the AutoCAD software interface.    * Starting the AutoCAD program from the start menu.    * Using existing AutoCAD templates to create drawing documents.    * Identifying file extensions (such as.dwg, dxf, dwt, and .bak) and file locations.    * Creating, formatting, editing and saving an Auto CAD drawing. 3. The student will demonstrate an understanding of the skills necessary to create basic 2D AutoCAD drawings.    * Drawing lines, curves, circles, ellipses, rectangles, polygons, and donuts.    * Modifying a drawing using the Erase tool.    * Identifying and using the various types of Object Snaps and Auto tracking.    * Using the offset tool, drawing points, construction lines and rays. 4. The student will demonstrate the ability to modify an AutoCAD drawing.    * Creating and managing multiple layers that define line color, line width, line type, etc.    * Identifying and using object editing tools (such as fillet, chamfer, break, join, trim, extend, lengthen, and scale).    * Arranging and patterning objects with move, copy, mirror, rotate, align, and array. 5. The student will demonstrate an understanding How to assign: Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space. 6. The student will demonstrate an understanding Dealing with: Text, Style, M text, Scale text, Spell, 7. The student will demonstrate the Object viewing.    * Zooming techniques |

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|  | * Panning techniques  1. The student will demonstrate the ability to output drawings in AutoCAD. 2. Drawing 3d modeling. 3. Drawing the Exercises. |
| **Indicative Contents** | Indicative content includes the following.  **Basic Drawing & Editing Commands**   * Drawing Lines * Erasing Objects * Drawing Lines with Polar Tracking * Drawing Rectangles * Drawing Circles * Undo and Redo Actions   [20 hrs.]  **Making Changes in Your Drawing**   * Selecting Objects for Editing * Moving Objects * Copying Objects * Rotating Objects * Scaling Objects * Mirroring Objects * Editing with Grips   [4 hrs.]  **Display Control**   * Zoom * Pan * Redraw * Clean Screen. [4 hrs.]   **Adding Dimensions**   * Dimensioning Concepts   •Adding Linear Dimensions  •Adding Radial and Angular Dimensions  •Editing Dimensions  [4 hrs.]  **Hatching**   * Hatching   •Editing Hatches  [4hrs]  **Printing Your Drawing**   * Printing Layouts * Print and Plot Settings [4 hrs.]   **3D MODELLING, Convert** 2D to 3D, Solid Editing [19 hrs.] |

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| **Learning and Teaching Strategies**  استراتيجيات التعلم والتعليم | |
| **Strategies** | When it comes to learning and teaching engineering drawing using AutoCAD, there are several strategies that can be effective. Here are some recommendations:   1. Familiarize with the Software: Before diving into engineering drawing concepts, it's important to become familiar with the AutoCAD software. This includes understanding the user interface, basic tools, and commands. Start with introductory tutorials or online resources that cover the basics of AutoCAD. 2. Start with Fundamentals: Begin by teaching the fundamental concepts of engineering drawing, such as orthographic projection, isometric projection, dimensioning, and tolerancing. Explain the principles and techniques used in creating accurate and clear technical drawings. 3. Hands-on Practice: Engineering drawing is a practical skill, so provide ample opportunities for hands-on practice. Assign exercises and projects that require students to create different types of drawings using AutoCAD.   Encourage them to explore and experiment with various tools and commands.   1. Step-by-Step Instructions: Break down complex drawing tasks into smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow and build their confidence. 2. Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible. 3. Group Activities and Collaboration: Promote collaboration among students by assigning group activities or projects. This allows them to work together, share knowledge, and learn from one another. Encourage students to discuss their approaches and problem-solving techniques related to engineering drawing in AutoCAD. 4. Provide Feedback: Regularly provide constructive feedback on students' drawings. Highlight areas for improvement, suggest alternative methods, and point out common mistakes. This feedback loop is crucial for students to refine their skills and develop a deeper understanding of engineering drawing principles. 5. Stay Updated with AutoCAD Features: AutoCAD is regularly updated with new features and enhancements. Stay up to date with these changes to ensure you're teaching the latest tools and workflows. Familiarize yourself with new capabilities that can improve efficiency and accuracy in engineering drawing. 6. Online Resources and Communities: Encourage students to explore online resources, tutorials, and communities dedicated to AutoCAD and engineering drawing. There are numerous websites, forums, and YouTube channels that offer valuable content and support for learning AutoCAD. 7. Project-Based Learning: Incorporate project-based learning into the curriculum, where students can apply their engineering drawing skills to real-world scenarios. Assign projects that simulate industry-related tasks, such as creating architectural   plans, mechanical assemblies, or electrical schematics using AutoCAD. |

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| **Student Workload (SWL)**  الحمل الدراسي للطالب محسوب ل **15** اسبوع | | | |
| **Structured SWL (h/sem)**  الحمل الدراسي المنتظم للطالب خلال الفصل | 63 | **Structured SWL (h/w)**  الحمل الدراسي المنتظم للطالب أسبوعي | 4 |
| **Unstructured SWL (h/sem)**  الحمل الدراسي غير المنتظم للطالب حلال الفصل | 62 | **Unstructured SWL (h/w)**  الحمل الدراسي غير المنتظم للطالب أسبوعي | 4 |
| **Total SWL (h/sem)**  الحمل الدراسي الكلي للطالب حلال الفصل | 125 | | |

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| **Module Evaluation**  تقييم المادة الدراسية | | | | | |
|  | | **Time/Nu**  **mber** | **Weight (Marks)** | **Week Due** | **Relevant Learning**  **Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 20% (20) | 5,  12 | (LO #3,4)  (LO #5,6) |
| **Online**  **Assignments** | 3 | 6% (6) | Continuous | (LO # 3-5)  (LO # 6-10) |
|  | **Projects** | 1 | 10% (10) | 13 | All |
|  | **Onsite**  **assignment** | 4 | 4% (1) | 4, 5, 10, 11 | LO # 3-9 |
| **Summative**  **assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-5 |
| **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Lab. Syllabus)**  المنهاج الاسبوعي للمختبر | |
|  | **Material Covered** |
| **Week 1** | **Introduction to Autodesk AutoCAD**   * Starting the Software * User Interface * Working with Commands * Cartesian Workspace * Opening an Existing Drawing File * Saving a Drawing File |
| **Week 2** | **Basic Drawing & Editing Commands**   * Drawing Lines * Erasing Objects * Drawing Lines with Polar Tracking |

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|  | * Drawing Rectangles * Drawing Circles * Undo and Redo Actions |
| **Week 3** | **Projects - Creating a Simple Drawing**   * Create a Simple Drawing * Create Simple Shapes |
| **Week 4** | **Drawing Precision in AutoCAD**   * Using Running Object Snaps * Using Object Snap Overrides * Polar Tracking at Angles * Object Snap Tracking * Drawing with Snap and Grid |
| **Week 5** | **Making Changes in Your Drawing**   * Selecting Objects for Editing * Moving Objects * Copying Objects * Rotating Objects * Scaling Objects * Mirroring Objects * Editing with Grips |
| **Week 6** | **Advanced Object Types**   * Drawing Arcs * Drawing Polylines * Editing Polylines * Drawing Polygons * Drawing Ellipses |
| **Week 7** | **Advanced Editing Commands**   * Trimming and Extending Objects * Stretching Objects * Creating Fillets and Chamfers * Offsetting Objects * Creating Arrays of Objects |
| **Week 8** | Mid-term exam |
| **Week 9** | **Adding Dimensions**   * Dimensioning Concepts   •Adding Linear Dimensions  •Adding Radial and Angular Dimensions |

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|  | •Editing Dimensions  **Text**   * Working with Annotations   •Adding Text in a Drawing  •Modifying Multiline Text  •Formatting Multiline Text  •Adding Notes with Leaders to Your Drawing |
| **Week 10** | **Hatching**   * Hatching   •Editing Hatches |
| **Week 11** | 3D modeling |
| **Week 12** | Convert 2D To 3D. |
| **Week 13** | Exercises drawing |
| **Week 14** | **Printing Your Drawing**   * Printing Layouts   •Print and Plot Settings |
| **Week 15** | Preparatory week before the final Exam |

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| **Learning and Teaching Resources**  مصادر التعلم والتدريس | | |
|  | **Text** | **Available in the**  **Library?** |
| **Required Texts** | D. A. Madsen, D. P. Madsen, and J. E. Briesacher, Engineering  Drawing and Design, 5th ed., Clifton Park, NY: Delmar Cengage Learning, 2011. | Yes |
| **Recommended Texts** | F. E. Giesecke, A. Mitchell, H. C. Spencer, I. L. Hill, and J. T.  Dygdon, Technical Drawing with Engineering Graphics, 15th ed., Upper Saddle River, NJ: Pearson, 2016. | No |
| **Websites** | https://[www.coursera.org/browse/physical-science-and-engineering](http://www.coursera.org/browse/physical-science-and-engineering) |  |

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| **Grading Scheme**  مخطط الدرجات | | | | |
| **Group** | **Grade** | **التقدير** | **Marks (%)** | **Definition** |
| **Success Group (50 - 100)** | **A -** Excellent | امتياز | 90 - 100 | Outstanding Performance |
| **B -** Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| **C -** Good | جيد | 70 - 79 | Sound work with notable errors |
| **D -** Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| **E -** Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX –** Fail | راسب )قيد المعالجة( | (45-49) | More work required but credit awarded |
| **F –** Fail | راسب | (0-44) | Considerable amount of work required |
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| **Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. | | | | |